



COMDTPUB P16700.4
NVIC 8 01, Ch-1
20 November 2003

NAVIGATION AND VESSEL INSPECTION CIRCULAR NO. 8 01, CHANGE 1

Subj: CH-1 to NVIC 8-01, APPROVAL OF NAVIGATION EQUIPMENT FOR SHIPS

1. PURPOSE. This Circular revises Navigation and Vessel Inspection Circular (NVIC) No. 8-01 to amend the guidance provided for a Coast Guard approval program for navigation equipment, as required under Chapter V, Regulation 18, of the 2000 amendments to the 1974 International Convention for the Safety of Life at Sea (SOLAS). These changes are needed to clarify the approval process for manufacturers seeking Coast Guard approval. Additionally, it establishes a process for voyage data recorder service providers to obtain Coast Guard approval.
2. ACTION. Operators of U.S. vessels and Coast Guard Officers in Charge, Marine Inspection should note that SOLAS Chapter V requires that SOLAS ships be equipped with type approved navigation equipment. This requirement was effective with the coming into force of the 2000 SOLAS amendments on 1 July 2002, and it applies to all navigation equipment installed on board a ship subject to SOLAS on or after that date. This Circular will be distributed by electronic means only and is available on the World Wide Web at <http://www.uscg.mil/hq/g-m/nvic/>.
3. DIRECTIVES AFFECTED. None.
4. BACKGROUND. The 2000 SOLAS amendments came into force on 1 July 2002. Regulations V/18.1 and 18.5 of these amendments require navigation equipment installed on ships on or after this date, to be type approved by the Administration. They also call for

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NON-STANDARD DISTRIBUTION: (see page 2)

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Administrations to require manufacturers to produce approved navigation equipment under a quality system audited by a competent authority.

5. DISCUSSION. The Coast Guard, as the U.S. maritime safety Administration under SOLAS, has established an interim approval program using standards, regulations, and processes already in place, in order to meet the United States' obligations under SOLAS Regulation V/18. The Coast Guard intends to propose federal regulations to establish a permanent approval program. This change 01 to NVIC 8-01 addresses the required annual performance test for the Voyage Data Recorder (VDR) and describes the approval process to become a Coast Guard accepted VDR service provider. In addition, this change describes an alternate process to address the approval of navigation equipment tested by laboratories not accepted by the Coast Guard.

Furthermore, most navigation equipment approved under this NVIC is expected to be covered by a Mutual Recognition Agreement (MRA) with the European Union, which means that manufacturers obtaining Coast Guard approval of equipment under this NVIC should also be able to obtain approval under the European Marine Equipment Directive (MarED) at the same time. Conversely, manufacturers obtaining approval of navigation equipment under the MarED could receive a Coast Guard approval as well. Details on the MRA may be obtained from:

Commandant (G-MSE-4)
U.S. Coast Guard
2100 Second St. S.W.
Washington, DC 20593
<http://www.uscg.mil/hq/g-m/mse4/mse4home.htm>

6. IMPLEMENTATION. Manufacturers may obtain approval of the equipment listed in enclosure (1). The approval process is described in enclosure (2). Enclosure (3) describes the quality system requirements. The standards applying to navigation equipment are listed in enclosure (4). The approval process for a service provider for voyage data recorders is contained in enclosure (5). Enclosure (6) provides an alternate Coast Guard approval process for navigation equipment wheelmarked by a European notified body and tested by a non-Coast Guard accepted laboratory. U.S. Coast Guard approved navigation equipment can be found at <http://cgmix.uscg.mil>.

T. H. GILMOUR /s/
ASSISTANT COMMANDANT FOR MARINE SAFETY,
SECURITY & ENVIRONMENTAL PROTECTION

- Encl: (1) Coast Guard Approved Navigation Equipment
(2) Coast Guard Approval Process for Navigation Equipment
(3) Manufacturer's Quality System Requirements
(4) Standards for Approved Navigation Equipment
(5) Approval Process for a Service Provider- Annual Certification of VDR's

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(6) Alternate Coast Guard Approval Process for Navigation Equipment Wheelmarked by a European Notified Body and Tested by a Non U.S Coast Guard Accepted Laboratory

Non-Standard Distribution:

D:d Except Baltimore, Moriches, and Grand Haven.

D:l CG Liaison Officer MILSEALIFTCOMD (Code N-7CG), CG Liaison Officer RSPA (DHM-22), CG Liaison Officer MARAD (MAR-742), CG Liaison Officer JUSMAGPHIL, CG Liaison Officer ABS, Maritime Liaison Office Commander U.S. Naval Forces Central Command (1).
ABS (1).
NOAA Fleet Inspection Office (1).
U.S. Merchant Marine Academy (1).

Coast Guard Approved Navigation Equipment

| Approval series ¹ | Equipment ² |
|-------------------------------------|---|
| 165.101 | Magnetic compass |
| 165.102 | Transmitting Magnetic Heading Device, TMHD (formerly Electromagnetic compass) |
| 165.103 | Gyrocompass |
| 165.105 | Speed and distance indicating device |
| 165.106 | Rate of turn indicator |
| 165.107 | Echosounding equipment |
| 165.110 | Heading control system |
| 165.111 | Auto-Tracking Aid |
| 165.112 | Track Control |
| 165.120 | Automatic radar plotting aid (ARPA) |
| 165.121 | Electronic Plotting Aid |
| 165.122 | Chart facilities for shipborne radar |
| 165.123 | Electronic chart display and information system (ECDIS) |
| 165.124 | ECDIS Back-up Equipment |
| 165.125 | Raster Chart Display Systems (RCDS) |
| 165.130 | Global positioning system (GPS) equipment |
| 165.131 | Global navigation satellite system (GLONASS) equipment |
| 165.132 | Differential global position system (DGPS) equipment |
| 165.133 | Differential global navigation satellite system (DGLONASS) equipment |
| 165.134 | Combined global position system and global navigation satellite system (GPS/GLONASS) receiver equipment |
| 165.135 | Loran-C equipment |
| 165.136 | Chayka equipment |
| 165.140 | Integrated bridge system |
| 165.141 | Integrated navigational system |

¹ "Approval series" means the first six digits of a number assigned by the Coast Guard to approved equipment.

² SOLAS Chapter V navigation equipment which includes a radio transmitter is authorized by the Federal Communications Commission, including Radar Equipment and Automatic Identification Systems (AIS).

| Approval series ¹ | Equipment ² |
|-------------------------------------|---|
| 165.150 | Voyage data recorder (VDR) |
| 165.155 | Shipborne automatic identification system (AIS) |
| 165.160 | Radar reflector |
| 165.165 | Sound reception system |
| 165.166 | Daylight signaling lamp |
| 165.203 | Gyrocompass for High Speed Craft |
| 165.210 | Automatic steering aid (automatic pilot) for High Speed Craft |
| 165.251 | Night Vision Equipment for High Speed Craft |

Coast Guard Approval Process for Navigation Equipment

1 Purpose.

This document describes the procedure for Coast Guard approval of navigation equipment for ships.

2 Independent laboratory.

Examinations, tests and inspections described in section 4, are to be conducted by an independent laboratory accepted by the Coast Guard under Title 46 of the Code of Federal Regulations (46 CFR), Subpart 159.010. A list of accepted laboratories is available from the Commandant at the address in the letterhead of this NVIC, or on the World Wide Web at <http://www.uscg.mil/hq/g-m/mse/lablist/lablist.html>.

3 Quality system.

The manufacturer must produce approved navigation equipment under an approved quality system as described in enclosure (3).

4 Approval procedure.

(a) The Coast Guard approves navigation equipment under the procedures in 46 CFR Subpart 159.005. Pre-approval review by the Coast Guard is not required.

(b) The independent laboratory must evaluate and test a sample of the navigation equipment presented for approval to determine whether the equipment meets each performance standard and testing standard listed for the equipment in enclosure (4). The independent laboratory's test report must show the test results as well as include a statement as to whether the navigation equipment meets each performance and testing standard listed.

(c) In addition to the inspection and test report, and the plans required under 46 CFR §§ 159.005-11 and 159.005-12, the manufacturer must ensure that Commandant (G-MSE) receives the results of the quality system assessment described in enclosure (3).

(d) The manufacturer may request Commandant (G-MSE) to renew a certificate of approval that is about to expire. The request for renewal must include --

(1) A statement that the navigation equipment continues to meet the description on the certificate of approval; and

(2) Evidence that the manufacturer's quality system has been audited and continues to meet the requirements in enclosure (3).

5 Marking and labeling.

(a) Whatever other languages they may be in, the markings required for an item of navigation equipment must be in English.

(b) The navigation equipment must be marked with the –

(1) Name and address of the manufacturer;

(2) Description of the equipment, using the title of the section in part 2 of enclosure (4) of this NVIC;

(3) Manufacturer's model identification;

(4) Serial number or an indication of the manufacturing date, such as month and year, or lot number; and

(5) U.S. Coast Guard approval number.

(c) The manufacturer must identify the performance and testing standards which the equipment meets, either on the item of navigation equipment or in an operations manual intended to be kept on the ship.

(d) All required markings must be in a place where they are visible without removal or disassembly of the equipment.

6 Checklist for application submittal.

New application for Coast Guard approval certificate must include:

(a) Copy of evaluation and complete test report performed by an independent laboratory.

(b) Copy of all certification received as a result of the test report in (1).

(c) Example of the marking and labeling of the equipment.

(d) Copy of the manufacturer's quality system manual / guidelines.

Manufacturer's Quality System Requirements**1 Purpose.**

This enclosure contains the procedures under which production control of approved equipment is maintained through the manufacturer's quality system, audited by a quality system registration organization. The manufacturer must arrange for continuing quality system assessment and audit as described in this enclosure, as a condition for continued Coast Guard approval.

2 Definition.

Quality system registration organization (QSRO) means an organization which is-

(a) Eligible for listing in the National Institute of Standards and Technology's (NIST) list of North American Quality System Registration Organizations (NAQSRO), and

(b) Accredited by a signatory to the International Accreditation Forum (IAF) Multilateral Recognition Agreement (MLA). The U.S. accreditation body is:

American National Standards Institute - Registrar Accreditation Board

National Accreditation Program - ANSI-RAB NAP

P.O. Box 3005

Milwaukee, Wisconsin WI 53201-3005

414 272 3937

<http://www.rabnet.com>

The organizations in the NAQSRO list have informed NIST about their quality system registration according to ISO 9001, or other quality system registration standard. The manufacturer is not required to be registered to ISO 9001 for the purposes of this quality system assessment. The listing may be obtained from the National Institute of Standards and Technology, Technical Standards Activities Program, Office of Standards Services, Technology Services, Gaithersburg, MD 20899-2150, <http://ts.nist.gov/ts/htdocs/210/gsig/iso9000.htm>

3 Application for assessment.

The manufacturer must apply to a QSRO for assessment of the quality system covering the equipment concerned. The equipment must be of a type which is within the QSRO's scope of accreditation. The application must include to the extent required by the QSRO –

- (1) All relevant information for the equipment category;
- (2) Documentation concerning the quality system; and
- (3) The technical documentation of the equipment covered.

4 Quality system requirements.

(a) The quality system must ensure that the equipment conforms to the documentation submitted for the equipment's approval, and is subjected to all inspections and tests required by the standards under which the equipment is approved. All the elements, requirements and provisions adopted by the manufacturer must be documented in a systematic and orderly manner in the form of written policies, procedures and instructions.

(b) The quality-system documentation must permit a consistent interpretation of the quality programs, plan, manuals and records. It must, in particular, include an adequate description of:

(1) The quality objectives and the organizational structure, responsibilities and powers of the management with regard to equipment quality;

(2) The manufacturing, quality control and quality-assurance techniques, processes and systematic actions that will be used;

(3) The examinations and tests that will be carried out before, during and after manufacture, and the frequency with which they will be carried out;

(4) The quality records, such as inspection reports and test data, calibration data, qualification reports of the personnel concerned, etc.; and

(5) The means of monitoring the achievement of the required equipment quality and the effective operation of the quality system.

5 QSRO assessment.

(a) The QSRO will assess the quality system to determine whether it satisfies the requirements in section 4. It will determine compliance with those requirements in respect of quality systems that implement the approval standard.

(b) The auditing team must have at least one member from the independent laboratory responsible for the inspections and tests conducted for approval of the equipment. The assessment procedure must include a visit to the manufacturer's premises. In the event that an independent laboratory representative is not available, the QSRO will propose an alternate member who has knowledge and experience in the relevant technology. The alternate member is subject to the acceptance of Commandant (G-MSE).

(c) The manufacturer and Commandant (G-MSE) must be notified of the results of the assessment. The notification must include the conclusions of the examination and the reasoned assessment decision.

6 Obligations under the quality system.

(a) The manufacturer must fulfill the obligations arising out of the quality system as approved and to maintain it so that it remains adequate and efficient.

(b) The manufacturer must keep the QSRO that has approved the quality system informed of any intended revision of that quality system.

(c) The QSRO will assess the revisions proposed and decide whether the revised quality system will still satisfy the requirements in section 4 or whether a reassessment is required.

(d) The manufacturer will be notified of the QSRO's decision. The notification will include the conclusions of the examination and the reasoned assessment decision.

7 Quality system surveillance.

(a) The manufacturer must arrange for continuing quality system surveillance by the QSRO. The purpose of surveillance is to make sure that the manufacturer meets the obligations of the approved quality system.

(b) The manufacturer must allow the QSRO access for inspection purposes to the locations of manufacture, inspection, testing and storage, and must provide it with all necessary information, in particular:

(1) The quality-system documentation; and

(2) The quality records, such as inspection reports and test data, calibration data, qualification reports of the personnel concerned, and other relevant data.

(c) The QSRO will periodically carry out audits to make sure that the manufacturer maintains and applies the quality system and will provide the manufacturer with audit reports. In addition, the QSRO may pay unannounced visits to the manufacturer. During such visits the QSRO may carry out tests or cause tests to be carried out to check that the quality system is functioning correctly, if necessary. The QSRO will provide the manufacturer with a visit report and, if a test has taken place, with a test report.

Standards for Approved Navigation Equipment

1 Referenced standards.

The following standards are referenced in this enclosure:

International Electrotechnical Commission (IEC)

Bureau Central de la Commission Electrotechnique Internationale, 3 rue de Varembe, P.O. Box 131, 1211 Geneva 20, Switzerland

IEC 60447 - "Man-Machine Interface (MMI) - Actuating Principles", April 1993

IEC 60872-1 - Maritime navigation and radiocommunication equipment and systems - Radar plotting aids - Part 1: Automatic radar plotting aids (ARPA) - Methods of testing and required test results, September 1998

IEC 60872-2 - Maritime navigation and radiocommunication equipment and systems - Radar plotting aids - Part 2: Automatic tracking aids (ATA) - Methods of testing and required test results, January 1999

IEC 60872-3 - Maritime navigation and radiocommunication equipment and systems - Radar plotting aids - Part 3: Electronic plotting aid (EPA) - Performance requirements - Methods of testing and required test results, August 2000

IEC 60936-3 - Maritime navigation and radiocommunication equipment and systems - Radar - Part 3: Radar with chart facilities - Performance requirements, methods of test and required test results

IEC 60945 - Maritime navigation and radiocommunication equipment and systems general requirements - methods of testing and required test results, November 1996

IEC 61023 - Maritime navigation and radiocommunication equipment and systems marine speed and distance measuring equipment (SDME) – performance requirements - methods of testing and required test results, July 1999

IEC 61075 – LORAN-C receivers for ships. Minimum performance standards - methods of testing and required test results, July 1991

IEC 61108-1 - Global navigation satellite systems (GNSS) - part 1: global positioning system (GPS) - receiver equipment - performance standards, methods of testing and required test results, July 2003

IEC 61108-2 - Maritime navigation and radiocommunication equipment and systems global navigation satellite systems (GNSS) - Part 2: Global navigation satellite system (GLONASS) - receiver equipment - performance standards, methods of testing and required test result, June 1998.

- IEC 61108-4 – Maritime navigation and radiocommunication equipment and systems - Global navigation satellite systems (GNSS) - Part 4:Differential global positioning system (GPS)/Differential global navigation satellite system (GLONASS) - Receiver equipment - Performance standards, methods of testing and required test results
- IEC 61162 series - - Maritime navigation and radiocommunication equipment and systems digital interfaces, July 2000
- IEC 61174 – Maritime navigation and radiocommunication equipment systems - Electronic chart display and information system (ECDIS) - Operational and performance requirements, methods of testing and required test results, August 1998
- IEC 61209 – Maritime navigation and radiocommunication equipment and systems - Integrated bridge systems (IBS) - Operational and performance requirements, methods of testing and required test results, April 1999
- IEC 61924 – Maritime navigation and communication equipment and systems - Integrated navigation systems (INS) operational and performance requirements - Methods of testing and required test results
- IEC 61993-2 – Maritime navigation and radiocommunication equipment and systems - Part 2: Universal shipborne automatic identification system - Performance requirements, methods of testing and required test results
- IEC 61996 – Maritime navigation and radiocommunication equipment and systems shipborne voyage data recorder (VDR) - Performance requirements methods of testing and required test results, July 2000.
- IEC 62065 – Maritime navigation and radiocommunication equipment and systems – Track control systems – Operational and performance requirements, methods of testing and required test results

International Maritime Organization (IMO)

Publications Section, 4 Albert Embankment, London SE1 7SR, England

- Resolution A.224(VII) – Performance standards for echo-sounding equipment, 12 October 1971
- Resolution A.342(IX) – Recommendation on performance standards for automatic pilots, 12 November 1975
- Resolution A.382(X)-- Recommendation on Performance standards for magnetic compasses, 14 November 1977
- Resolution A.384(X)-- Performance standards for radar reflectors, 14 November 1977
- Resolution A.424(XI) – Performance standards for gyro-compasses, 15 November 1979

- Resolution A.526(13) – Performance standards for rate of turn indicators (ROTI),
17 November 1983
- Resolution A.694(17) -- General requirements for shipborne radio equipment forming part of
the global maritime distress and safety system (GMDSS) and for electronic navigational
aids, 6 November 1991
- Resolution A.817(19) -- Recommendation on performance standards for Electronic Chart
Display and Information Systems (ECDIS), 23 November 1995; as amended by
resolution MSC.64(67), Annex 5, 4 December 1996
- Resolution A.818(19) – Performance standards for shipborne Loran-C and Chayka receivers,
23 November 1995
- Resolution A.819(19) – Performance standards for shipborne global position system(GPS)
receiver equipment, 23 November 1995
- Resolution A.821(19) – Performance standards for gyro-compasses for High Speed Craft,
23 November 1995
- Resolution A.822(19) – Performance standards for automatic steering aids (automatic pilots)
for High Speed Craft, 23 November 1995
- Resolution A.823(19) – Performance standards for automatic radar plotting aids,
23 November 1995
- Resolution A.824(19), as amended – Recommendations on performance standards for
devices to indicate speed and distance, 23 November 1995
- Resolution A.861(20) – Recommendation on Performance Standards for Voyage Data
Recorders (VDRs), November 1997.
- Resolution MSC.53(66) – Performance standards for shipborne GLONASS receiver
equipment, 30 May 1996
- Resolution MSC.64(67), Annex 1 – Performance standards integrated bridge system,
4 December 1996
- Resolution MSC.64(67), Annex 2 – Recommendation on performance standards for
shipborne DGPS and DGLONASS maritime radio beacon receiver equipment,
4 December 1996
- Resolution MSC.64(67), Annex 3 – Recommendation on performance standards for heading
control systems, 4 December 1996
- Resolution MSC.64(67), Annex 4 – Recommendation on performance standards for radar
equipment, 4 December 1996
- Resolution MSC.74(69), Annex 2 – Recommendations on performance standards for track
control systems, 12 May 1998

Resolution MSC.74(69), Annex 3 – Recommendations on performance standards for an universal shipborne automatic identification system (AIS), 12 May 1998

Resolution MSC.74(69), Annex 4 – Recommendations on performance standards for echo-sounding equipment, 12 May 1998

Resolution MSC.86(70), Annex 1 – Performance standard for sound reception systems, 8 December 1998

Resolution MSC.86(70), Annex 2 – Performance standard for marine transmitting magnetic heading devices (TMHDs), 8 December 1998

Resolution MSC.86(70), Annex 3 – Performance standard for integrated navigational systems, 8 December 1998

Resolution MSC.86(70), Annex 4 – Amendments to the Recommendation on Performance Standards for Electronic Chart Display and Information Systems (ECDISs), 8 December 1998

Resolution MSC.94(72) – Recommendation on performance standards for night vision equipment for High-Speed Craft (HSC), 31 May 2000

Resolution MSC.95(72) – Performance Standards For Daylight Signalling Lamps, 22 May 2000

International Organization for Standardization (ISO)

1, rue de Varembe, Case postale 56, CH-1211 Geneva 20, Switzerland

ISO 449: 1997 - Ships and marine technology - Magnetic compasses, binnacles and azimuth reading devices - Class A, June 19, 1997

ISO 694: 2000 - Positioning of magnetic compasses in ships

ISO 1069: 1973 - Magnetic compasses and binnacles for sea navigation - Vocabulary

ISO 2269: 1992 - Shipbuilding - Class A magnetic compasses, azimuth reading devices and binnacles - Tests and certification

ISO 8728: 1997 - Ships and marine technology - Marine gyro-compasses

ISO 8729: 1997 - Ships and marine technology - Marine radar reflectors

ISO/IEC 9126: 1991 - Information Technology, Software Product Evaluation, Quality Characteristics and Guidelines for their Use

ISO 9875: 2000 - Ships and marine technology - Marine echo-sounding equipment

ISO 11606: 2000 - Ships and marine technology - Marine electromagnetic compasses

ISO 11674: 2000 - Ships and marine technology - Heading control systems

ISO 16328: 1999 - Ships and marine technology -- Gyro-compasses for high-speed craft

ISO 16329: 2001 - Ships and marine technology -- Heading control systems for high speed craft

International Telecommunication Union (ITU)

Place des Nations, CH-1211 Geneva 20, Switzerland

ITU-R M.1371-1 - Technical characteristics for a universal shipborne automatic identification system using time division multiple access in the VHF maritime mobile band

2 Standards applying to approved navigation equipment.

| Approval series ³ | Equipment ⁴ | Applicable Standards |
|-------------------------------------|---|--|
| 165.101 | Magnetic compass | IMO Resolution A.382(x) and A.694(17); ISO Standards: ISO 449, ISO 694, ISO 1069, and ISO 2269; IEC 60945. |
| 165.102 | Transmitting Magnetic Heading Device, TMHD (formerly Electromagnetic compass) | IMO Resolution A.694(17) and MSC.86(70) Annex 2; ISO 11606; IEC 61162 (applicable part) and IEC 60945. |
| 165.103 | Gyrocompass | IMO Resolution A.694(17) and A.424(XI); ISO 8728; IEC 61162 (applicable part) and IEC 60945. |
| 165.105 | Speed and distance indicating device | IMO Resolution A.694(17) and A.824(19); IEC 61162 (applicable part) and IEC 60945. |
| 165.106 | Rate of turn indicator | IMO Resolution A.694(17) and A.526(13); IEC 61162 (applicable part). |
| 165.107 | Echosounding equipment | IMO Resolutions A.224(VII) as amended by IMO Resolution MSC74(69) Annex 4, and A.694(17); ISO 9875 IEC 61162 (applicable part); and IEC 60945. |
| 165.110 | Heading control system | IMO Resolutions A.342(IX) as amended by IMO Resolution MSC64(67) Annex 3, and A.694(17); |

³ “Approval series” means the first six digits of a number assigned by the Coast Guard to approved equipment.

⁴ SOLAS Chapter V navigation equipment which includes a radio transmitter is authorized by the Federal Communications Commission, including Radar Equipment and Automatic Identification Systems (AIS).

| Approval series ³ | Equipment ⁴ | Applicable Standards |
|-------------------------------------|---|--|
| | | ISO 11674; IEC 61162 (applicable part); and IEC 60945. |
| 165.111 | Auto-Tracking Aid | IMO Resolutions A.694(17) and MSC64(67) Annex 4, Appendix 1; IEC 60872-2; IEC 60945; and IEC 61162 (applicable part). |
| 165.112 | Track Control | IMO Resolutions A.694(17) and MSC74(69) Annex 2; IEC 62065; IEC 60945; and IEC 61162 (applicable part). |
| 165.120 | Automatic radar plotting aid (ARPA) | IMO Resolutions A.694(17) and A.823(19); IEC 60872-1; and IEC 61162 (applicable part). |
| 165.121 | Electronic Plotting Aid | IMO Resolutions A.694(17) and MSC64(67) Annex 4, Appendix 2; IEC 60872-3; IEC 60945; and IEC 61162 (applicable part). |
| 165.122 | Chart facilities for shipborne radar | IMO Resolutions A.694(17) and A.817(19) as amended by IMO Resolution MSC64(67) Annex 5; IEC 60936-3; IEC 60945; and IEC 61162 (applicable part). |
| 165.123 | Electronic chart display and information system (ECDIS) | IMO Resolutions A.694(17) and A.817(19) as amended by IMO Resolution MSC64(67) Annex 4; IEC 61174; IEC 60945; and IEC 61162 (applicable part). |
| 165.124 | ECDIS Back-up Equipment | IMO Resolutions A.694(17) and A.817(19) as amended by IMO Resolution MSC64(67) Annex 5; IEC 61174, Annex G; IEC 60945; and IEC 61162 (applicable part). |
| 165.125 | Raster Chart Display Systems (RCDS) | IMO Resolutions A.694(17) and A.817(19) as amended by IMO Resolution MSC64(67) Annex 5; |

| Approval series ³ | Equipment ⁴ | Applicable Standards |
|-------------------------------------|---|---|
| | | IEC 61174, Annex H; IEC 60945; and IEC 61162 (applicable part). |
| 165.130 | Global positioning system (GPS) equipment | IMO Resolutions A.694(17) and A.819(19) as amended by IMO Resolution MSC64(67) Annex 5; IEC 61108-1; IEC 60945; and IEC 61162 (applicable part). |
| 165.131 | Global navigation satellite system (GLONASS) equipment | IMO Resolution A.694(17) and MSC53(66); IEC 61108-2; IEC 60945; and IEC 61162 (applicable part). |
| 165.132 | Differential global position system (DGPS) equipment | IMO Resolution A.694(17) and MSC64(67); IEC 61108-4; IEC 60945; and IEC 61162 (applicable part). |
| 165.133 | Differential global navigation satellite system (DGLONASS) equipment | IMO Resolution A.694(17) and MSC64(67) Annex 2; IEC 61108-4; IEC 60945; and IEC 61162 (applicable part). |
| 165.134 | Combined global position system and global navigation satellite system (GPS/GLONASS) receiver equipment | IMO Resolution A.694(17) and MSC74(69) Annex 1; IEC 60945; and IEC 61162 (applicable part). |
| 165.135 | Loran-C equipment | IMO Resolutions A.694(17) and A.818(19); IEC 61075; IEC 60945; and IEC 61162 (applicable part). |
| 165.136 | Chayka equipment | IMO Resolutions A.694(17) and A.818(19); IEC 61075; IEC 60945; and IEC 61162 (applicable part). |
| 165.140 | Integrated bridge system | IMO Resolution A.694(17) and MSC64(67) Annex 1; IEC 61209; IEC 60945; and IEC 61162 (applicable part). |
| 165.141 | Integrated navigational system | IMO Resolution A.694(17) and MSC86(70) Annex 3; |

| Approval series ³ | Equipment ⁴ | Applicable Standards |
|-------------------------------------|---|---|
| | | IEC 61924; IEC 60945; and IEC 61162 (applicable part). |
| 165.150 | Voyage data recorder (VDR) ⁵ | IMO Resolution A.694(17) and A.861(20); IEC 61996; IEC 60945; and IEC 61162 (applicable part). See requirements below. |
| 165.155 | Shipborne automatic identification system (AIS) ⁶ | IMO Resolution A.694(17) and MSC74(69) Annex 3; IEC 61993-2; IEC 60945; IEC 61162 (applicable part); and ITU Recommendation ITU-R M.1371-1. |
| 165.160 | Radar reflector | IMO Resolution A.384(x); IEC 60945; and ISO 8729. |
| 165.165 | Sound reception system | IMO Resolution A.694(17) and MSC86(70) Annex 1; IEC 61162 (applicable part); and IEC 60945. |
| 165.166 | Daylight signaling lamp | IMO Resolutions A.694(17) and MSC.95(72); and IEC 60945. |
| 165.203 | Gyrocompass for High Speed Craft | IMO Resolutions A.694(17) and A.821(19); ISO 16328; IEC 61162 (applicable part); and IEC 60945. |
| 165.210 | Automatic steering aid (automatic pilot) for High Speed Craft | IMO Resolutions A.694(17), A.822(19), and A.342(IX) as amended by IMO Resolution MSC64(67) Annex 3; ISO 16329; IEC 60945; and IEC 61162 (applicable part). |
| 165.251 | Night Vision Equipment for High Speed Craft | IMO Resolutions A.694(17) and MSC.94(72); ISO 60447; ISO / IEC 9126; IEC 61162 (applicable part); and |

⁵ See 165.150 Voyage Data Recorder annual performance test at the end of this table.

⁶ See 165.155 Shipborne Automatic Identification System approvals at the end of this table.

| Approval series ³ | Equipment ⁴ | Applicable Standards |
|---|-------------------------------|-----------------------------|
| | | IEC 60945. |

165.150 – Voyage data recorder (VDR).

Annual performance test. After 1 July 2002, each VDR installed on a vessel is required to undergo an annual performance test under the requirements of regulation V/20.4 of the International Convention for the Safety of Life at Sea (SOLAS). A service provider meeting the requirements of enclosure (5) of this NVIC and accepted by the Coast Guard for testing VDR's must conduct the performance test.

(1) The VDR system shall be tested to verify the accuracy, duration and recoverability of the recorded data. In addition, tests and inspections shall be conducted to determine the serviceability of all protective enclosures and devices fitted to aid location.

(2) The service provider will issue a certificate of compliance if the VDR successfully passes the test. The certificate is to be retained on board the ship. The certificate includes:

- (i) The words "Certificate of Compliance for Voyage Data Recorder".
- (ii) The name of the ship and its official number.
- (iii) The make, model, approval number, and serial number of the VDR.
- (iv) The date of the testing.
- (v) The applicable performance standards applied.
- (vi) The name and address of the service provider who performed the testing.
- (vii) The name and signature of the service provider representative responsible for the testing.
- (viii) Date and file identification of the Coast Guard letter accepting the service provider for testing of VDR.

165.155 – Shipborne automatic identification system (AIS).

Approval. Shipborne automatic identification systems (AIS) contain radio transmitters and are therefore authorized by the Federal Communications Commission under Subpart J of 47 CFR 2. Prior to FCC authorization, the shipborne AIS design, test reports, and quality system audit should be reviewed by the Coast Guard, in accordance with the procedures in this directive. The Coast Guard will provide a letter to the manufacturer containing the results of the assessment. The Coast Guard will transmit a copy of this letter to the FCC for its use in authorizing the equipment.

Coast Guard approval process for voyage data recorder service providers.

1 Purpose.

This enclosure describes the procedure for service providers to receive Coast Guard approval to perform the annual certification testing for Voyage Data Recorders (VDR's).

2 Service provider.

A service provider can be but is not limited to an independent laboratory, manufacturer or sales representative. All service providers after meeting the requirements in this enclosure and receiving Coast Guard approval will be certified to perform the annual inspection of the VDR's. The annual inspection of the VDR's shall be performed in accordance with section 10 of this enclosure.

3 Quality system.

The service provider shall have in place an approved quality system as described in the following:

(a) The quality system must ensure that the equipment conforms to the documentation submitted for the equipment's approval and is subjected to all inspections and test required by the standards under which the equipment is approved.

(b) The quality system documentation must permit a consistent interpretation of the quality programs, plan, manuals and records. It must, in particular, include an adequate description of:

(1) The quality records, such as inspection reports and test data, calibration data.

(2) Training plan and qualification reports of the personnel performing the annual certification.

(3) Maintenance and documentation of training received by each approved inspector.

(4) Documented procedures and instructions for how to carry out testing and examination of radio equipment.

(5) Documented procedures and instructions for proper operation of each item of the testing equipment shall be available at all times.

(6) Documentation / presentation of the annual inspection report form showing the results of required testing under 46 CFR 165.150.

(7) The means of monitoring the testing procedures of the required equipment and the effective operation of the quality system.

(8) Periodic review of testing process, complaints, corrective action, maintenance and control of documents.

4 Coast Guard assessment.

The Coast Guard will assess the quality system to determine whether it satisfies the requirements in section (3). It will determine compliance with those requirements in respect of quality systems that implement the approval standard.

The following documents are to be submitted as part of the Coast Guard assessment:

(a) Description of the service provider's organizational structure, management hierarchy and a list of any subsidiaries that shall be part of the final approval.

(b) Documented procedures covering the requirements of section (3).

(c) Documented training and experience of the service provider with servicing of the VDR equipment.

(d) Type and model of equipment that will be used in the annual testing procedure.

(e) List of service personnel and their training.

(f) List of activities that may present a conflict of interest for the service provider.

(g) Where applicable, a documented license presented by the equipment's manufacturer.

5 Obligations under the quality system.

(a) The manufacturer must fulfill the obligations arising out of the quality system as approved and to maintain it so that it remains adequate and efficient.

(b) The service provider must keep the Coast Guard informed of any intended revision of that quality system.

(c) The Coast Guard will assess the revisions proposed and decide whether the revised quality system will still satisfy the requirements in section 3 or whether a reassessment is required.

(d) The service provider will be notified of the Coast Guard's decision. The notification will include the conclusions of the examination and the reasoned assessment decision.

6 Quality system surveillance.

The service provider must arrange for continuing quality system surveillance by a QSRO as defined in section (2) of enclosure (3) to this NVIC. The purpose of surveillance is to make sure that the service provider meets the obligations of the approved quality system.

The service provider must be able to provide to the Coast Guard, upon request and for inspection purposes, all the necessary information pertaining to the quality system documentation and the quality records, such as inspection reports, test data, calibration data, qualification reports of the personnel concerned and other relevant data.

7 Termination of approval.

The approval for the service provider to perform the annual testing of VDR equipment terminates if the service provider -

- (a) Requests termination,
- (b) Is no longer in business,
- (c) Knowingly fails to perform or supervise the annual inspection,
- (d) Does not meet the requirements of this NVIC,
- (e) Contracts or transfers the performance or supervision of required inspections or tests to another service provider without the approval of the Commandant; or
- (f) Fails to, or in the opinion of the Commandant is unable to, carry out its responsibilities under this NVIC.

8 Reference Documents.

- (a) SOLAS 1974, as amended
- (b) IMO Resolution A.789(19): Specification on the survey and certification functions of recognized organizations on behalf of the administration
- (c) IMO Resolution A.694(17) and A.861(20)
- (d) IEC standards IEC 60945, IEC 61162 and IEC 61996

9 Annual Performance Test.

(a) The annual performance testing of the VDR shall be in compliance with the requirements of regulation V/20.4 of the International Convention for the Safety of Life at Sea (SOLAS).

(b) The VDR system shall be tested to verify the accuracy, duration and recoverability of the recorded data. In addition, tests and inspections shall be conducted to determine the

serviceability of all protective enclosures and devices fitted to aid location.

(c) The service provider will issue a certificate of compliance if the VDR successfully passes the test. The certificate is to be retained on board the ship. The certificate includes:

- (1) The words "Certificate of Compliance for Voyage Data Recorder."
- (2) The name of the ship and its official number.
- (3) The make, model, approval number, and serial number of the VDR.
- (4) The date of the testing.
- (5) The applicable performance standards applied.
- (6) The name and address of the service provider.
- (7) The name and signature of the service provider representative responsible for the testing.
- (8) Date and file identification of the Coast Guard letter accepting the service provider for testing the VDR.

Alternate Coast Guard Approval Process for Equipment Wheelmarked by an EU Notified Body and Tested by a Non U.S. Coast Guard Accepted Laboratory.

1 Purpose.

The intent of this enclosure is to provide guidance on the approval process for navigation equipment as required under Chapter V, Regulation 18, of the 2000 Amendments to SOLAS 74 for equipment that has already received a wheelmark by an EU Notified Body and has been tested by a independent laboratory not accepted by the U.S. Coast Guard.

2 Alternate approval.

The Commandant (G-MSE-3) may issue a Coast Guard approval certificate for navigation equipment where testing has determined that the navigation equipment has received full approval from a notified body and meets the requirements established by enclosures (2), (3) and (4) of this NVIC.

Equipment accepted under this alternate approval process are listed below:

Coast Guard Approved Navigation Equipment

| Approval series ⁵ | Equipment |
|-------------------------------------|---|
| 165.101 | Magnetic compass |
| 165.102 | Transmitting Magnetic Heading Device, TMHD (formerly Electromagnetic compass) |
| 165.103 | Gyrocompass |
| 165.105 | Speed and distance indicating device |
| 165.106 | Rate of turn indicator |
| 165.107 | Echosounding equipment |
| 165.110 | Heading control system |
| 165.111 | Auto-Tracking Aid |
| 165.112 | Track Control |
| 165.120 | Automatic radar plotting aid (ARPA) |
| 165.121 | Electronic Plotting Aid |
| 165.122 | Chart facilities for shipborne radar |
| 165.123 | Electronic chart display and information system (ECDIS) |
| 165.124 | ECDIS Back-up Equipment |

⁵ “Approval series” means the first six digits of a number assigned by the Coast Guard to approved equipment.

| Approval series ⁵ | Equipment |
|-------------------------------------|---|
| 165.125 | Raster Chart Display Systems (RCDS) |
| 165.130 | Global positioning system (GPS) equipment |
| 165.131 | Global navigation satellite system (GLONASS) equipment |
| 165.132 | Differential global position system (DGPS) equipment |
| 165.133 | Differential global navigation satellite system (DGLONASS) equipment |
| 165.134 | Combined global position system and global navigation satellite system (GPS/GLONASS) receiver equipment |
| 165.135 | Loran-C equipment |
| 165.136 | Chayka equipment |
| 165.140 | Integrated bridge system |
| 165.141 | Integrated navigational system |
| 165.150 | Voyage data recorder (VDR) |
| 165.160 | Radar reflector |
| 165.165 | Sound reception system |
| 165.166 | Daylight signaling lamp |
| 165.203 | Gyrocompass for High Speed Craft |
| 165.210 | Automatic steering aid (automatic pilot) for High Speed Craft |
| 165.251 | Night Vision Equipment for High Speed Craft |

3 Coast Guard assessment.

(a) The Coast Guard will assess the test report from the independent laboratory, the certification by the recognized notified body and the manufacturers quality system manual / guidelines as described in enclosures (2), (3) and (4) of this NVIC.

(b) The following documents are to be submitted as part of the Coast Guard assessment:

(1) Copy of the evaluation and complete test report performed by an independent laboratory.

(2) Copy of all certifications received as a result of the test report in (1).

(3) Example of the marking and labeling of the equipment.

(4) Copy of the manufacturers quality system manual / guidelines.